channel 26 eccentric to the actuation axis 51 so that the flow formed through the inlet channel 26 runs at a distance from the actuation axis 51 so that the liquid flow through the inlet 31 into the switching chamber 35 swirls around the actuation axis 51.

Of course, beyond the free end 62 of the tappet valve 50, the sealing element 45 can also be located in the area of a part of the tappet valve 50 shifted toward the actuating end 51 so that an annular channel corresponding to annular channel 55 can be formed on opposite sides of the sealing elements 45. In addition, there can also be several sealing elements 45 affixed to the single tappet valve 50 they are offset axially toward the actuation axis 51, and several additional inlet and outlet channels can be correspondingly created. This allows several liquid-conducting channels to be advantageously switched simultaneously.--

IN THE CLAIMS:

Please cancel claims 1, 4, 12 and 13 without prejudice and rewrite them as new claim 15 as follows:

--15. A valve for liquid separation, especially for analytical or preparative liquid chromatography, comprising a valve body having an inlet and at least two outlets, a sealing element coupled with the inlet and outlets, the sealing element including shut-off surfaces for alternately shutting off the outlets, the shut-off surfaces including an arcuate segment, the shut-off surfaces respectively associated with the outlets being arranged to

face away from each other, (being at a free end of an actuator,) the opposing shut-off surfaces of the valve body narrowing conically or as a funnel toward the outlet that opposes the free end of the actuator, an outlet area being arranged between the opposing shut-off surfaces and an outlet channel, the outlet channel having a conically narrowing opening surface.--

Please amend claims 2, 3, 5, 7, 9, 11 and 14 as follows:

A2 2. (Amended) The valve of claim 15 wherein the shut-off surfaces are radially symmetrical to an actuation axis of the actuator for translating the sealing element.

3. (Twice Amended) The valve of claim 2 wherein the actuator includes a tappet valve connected to the sealing element.

A3 5. (Twice Amended) The valve of claim 3 wherein cross-sections of the shut-off surfaces in planes extending in the direction of longitudinal movement of the actuator and surface parts of the sealing element which mate with the shut-off surfaces and are opposite the inlet form an essentially continuous line.

7. (Twice Amended) The valve of claim 15 wherein the opposing shut-off surfaces form an angle with the actuation axis at the annular sealing surface that is greater than or equal to 15°.

A4 9. (Twice Amended) The valve of claim 15 wherein the opposing shut-off surfaces of the valve body are formed of material that is softer and more elastic than shut-off surfaces of the sealing element.

a5 11. (Amended) The valve of claim 15 wherein the opposing shut-off surfaces have a step or nose-shaped projection at the annular sealing surface.

a6 14. (Amended) The valve of claim 15 wherein the outlets are on both sides of the inlet and oppose each other.

Please add claims 16-48 as follows:

a7 --16. A valve for liquid separation, especially for analytical or preparative liquid chromatography, comprising a valve body having an inlet and at least two outlets, a sealing element coupled with the inlet and outlets, the sealing element including shut-off surfaces for alternately shutting off the outlets, the shut-off surfaces including an arcuate segment, the shut-off surfaces respectively associated with the outlets being arranged to face away from each other, wherein the outlets and sealing element are arranged so that when a first of the outlets is shut off, the sealing element assigned to seal the first outlet rests on opposing shut-off surfaces of a valve seat of the valve body to form an annular sealing surface, the opposing shut-off surfaces having a step or nose-shaped projection at the annular sealing surfaces.

--17. A valve for selectively supplying fluid from an inlet port to an outlet port comprising a sealing element, a passage selectively opened and shut between the inlet and outlet ports by the sealing element, the passage and the sealing element being arranged so there is relative longitudinal back and forth

movement between them in first and second opposite directions along a longitudinal axis such that when the sealing element is at (a) a first position relative to the passage along the axis the sealing element is disengaged from the passage interior surface to provide a fluid flow path between the inlet and outlet ports, and (b) a second position relative to the passage along the axis the sealing element engages a portion of the passage interior surface to form a seal between the inlet and outlet ports, the sealing element including a tapered peripheral surface extending generally in the direction of the axis, portions of the peripheral surface being sized and arranged for selectively engaging portions of the passage interior surface to form the seal, the tapered sealing surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the sealing element sealing surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the sealing element sealing surface, [the passage interior surface including a tapered surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the passage interior surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the passage interior surface,] [the passage interior surface including first and second segments that are displaced from each other along the axis so that the first segment

is closer to the outlet port than the second segment and the second segment is closer to the inlet port than the first segment, the perimeters of all cross sections of the second segment being greater than the perimeters of all cross sections of the first segment so all of the passage interior surfaces of the first segment are closer to the axis than all the passage interior surfaces of the second segment], [the passage interior surface including a lip between adjacent portions of the first and second segments, the length of the lip in a direction at right angles to the axis being substantially less than (a) the distance between the axis and the perimeter of the cross-section of the first segment farthest from the outlet port and (b) the distance between the axis and the perimeter of the cross-section of the second segment closest to the outlet port], [the tapered peripheral surface and the passage interior surface being sized, positioned and arranged so that (a) during initial movement of the sealing element from the first position toward the second position a flow path is provided between the inlet and outlet ports between the tapered peripheral surface of the sealing element and the passage interior surface including the first and second second segments, and (b) as the sealing element continues to move toward the outlet port the tapered sealing surface of the sealing element engages the lip to form a seal and prevent fluid flow between the inlet and outlet ports,] [the spacings between the tapered sealing surface and the

passage interior surfaces of the first and second segments while the flow path is provided during the initial movement of the sealing element being substantially less than (a) the distance between the axis and the perimeter of the cross-section of the first segment farthest from the outlet port, and (b) the distance between the axis and the perimeter of the cross-section of the second segment closest to the outlet port].

--18. The valve of claim 17 wherein the sealing element peripheral surface is arcuate and the passage interior surfaces of the first and second segments are frusto-conical.

--19. The valve of claim 18 wherein the sealing element peripheral surface is a segment of a sphere and cross sections of the passage interior surfaces in planes at right angles to the axis are circular.

--20. The valve of claim 19 wherein the lip is arranged to deform slightly in response to the sealing element continuing to move from the initial sealed state between the lip and the peripheral surface along the axis toward the outlet port to provide an annular sealing surface having a length in the direction of the axis that increases from the length of the annular sealing surface when initial contact occurs between the sealing element peripheral surface and the lip.

--21. The valve of claim 17 wherein the lip is arranged to deform slightly in response to the sealing element continuing to

move from the initial sealed state between the lip and the peripheral surface along the axis toward the outlet port to provide an annular sealing surface having a length in the direction of the axis that increases from the length of the annular sealing surface when initial contact occurs between the sealing element peripheral surface and the lip.

--22. The valve of claim 17, wherein the valve is arranged for selectively supplying fluid from the inlet port to a second outlet port via a second passage between the inlet port and second outlet port, (the sealing element peripheral surface and the interior surface of the second passage being arranged so that a fluid flow path is provided between the inlet port and the second outlet port while the sealing element is at the first position and a seal is provided between the inlet port and the second outlet port while the sealing element is at the second position); the sealing element, the interior surface of the second passage and the interior surface of the second segment being arranged to provide a flow path between the inlet port and a surface of the sealing element for supplying fluid from the inlet port to the surface of the sealing element to provide a fluid pressure for urging the sealing element against the lip while the sealing element is at the second position.

--23. The valve of claim 22 wherein the second passage is coaxial with the axis and the inlet port is between the second

segment and the second outlet port, and further including an actuator for translating the sealing element between the first and second positions, the actuator including a shaft extending in the second passage along the axis, one end of the shaft being connected to the sealing element.

--24. The valve of claim 23 wherein the actuator shaft has circular cross sections at right angles to the axis so that the second passage has annular cross sections.

--25. The valve of claim 22 wherein the second passage includes a section with a continuous taper between the inlet port and the second outlet port, the taper of the second passage being such that the perimeter of the cross-section of the tapered section closest to the inlet port is greater than the perimeter of all other cross-sections of the tapered section and the perimeter of the cross-section of the tapered section closest to the second outlet port is smaller than the perimeter of all other cross-sections of the tapered section, and the portion of the sealing element peripheral surface for forming a seal between the sealing element and the second outlet port is tapered such that when the sealing element seals the second outlet port cross sections of the sealing element peripheral surface closest to the inlet port have greater perimeters than cross sections of the sealing element peripheral surface closest to the second outlet port.

--26. The valve of claim 25 wherein the continuous taper of the second passage has a frusto-conical shape and the portion of the sealing element sealing surface for forming the seal between the sealing element and the second outlet port has an arcuate shape.

--27. The valve of claim 26 wherein the continuous taper of the second passage has circular cross sections at right angles to the axis and the portion of the sealing element peripheral surface for forming a seal between the sealing element and the second outlet port is a sector of a sphere.

--28. The valve of claim 22 wherein the sealing element and the passages are arranged so that as the sealing element translates between the first and second positions fluid flow paths are provided between the inlet port and both outlet ports.

--29. A valve for selectively supplying fluid from an inlet port to an outlet port comprising a sealing element, a passage selectively opened and shut between the inlet and outlet ports by the sealing element, the passage and the sealing element being arranged so there is relative longitudinal back and forth movement between them in first and second opposite directions along a longitudinal axis such that when the sealing element is at (a) a first position relative to the passage along the axis the sealing element is disengaged from the passage interior surface to provide a fluid flow path between the inlet and outlet ports, and (b) a

second position relative to the passage along the axis the sealing element engages a portion of the passage interior surface to form a seal between the inlet and outlet ports, the sealing element including a tapered peripheral surface extending generally in the direction of the axis, portions of the peripheral surface being sized and arranged for selectively engaging portions of the passage interior surface to form the seal, the tapered peripheral surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the sealing element sealing surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the sealing element sealing surface, the passage interior surface including a tapered surface having cross sections of progressively larger perimeters along the axis such that the cross-section of the passage interior surface closest to the outlet port has the smallest perimeter that is closer to the longitudinal axis than any other cross-section of the passage interior surface, the passage interior surface including a lip, the tapered peripheral surface and the passage interior surface being sized, positioned and arranged so that (a) during initial movement of the sealing element from the first position toward the second position a flow path is provided between the inlet and outlet ports between the tapered peripheral surface of the sealing element and the passage interior surface, the lip being arranged to deform slightly in response to

the sealing element continuing to move toward the outlet port from the initial sealed state between the lip and the peripheral surface along the axis to provide an annular sealing surface having a length in the direction of the axis that increases from the length of the annular sealing surface when initial contact occurs between the sealing element peripheral surface and the lip.

--30. The valve of claim 29 wherein the sealing element peripheral surface is arcuate and the passage interior surfaces of the first and second segments are frusto-conical.

--31. The valve of claim 30 wherein the sealing element peripheral surface is a segment of a sphere and cross sections of the passage interior surfaces in planes at right angles to the axis are circular.

--32. The valve of claim 30, wherein the valve is arranged for selectively supplying fluid from the inlet port to a second outlet port via a second passage between the inlet port and second outlet port, the sealing element peripheral surface and the interior surface of the second passage being arranged so that a fluid flow path is provided between the inlet port and the second outlet port while the sealing element is at the first position and a seal is provided between the inlet port and the second outlet port while the sealing element is at the second position; the sealing element, the interior surface of the second passage and the interior surface of the second segment being arranged to provide a

flow path between the inlet port and a surface of the sealing element for supplying fluid from the inlet port to the surface of the sealing element to provide a fluid pressure for urging the sealing element against the lip while the sealing element is at the first position.

--33. The valve of claim 32 wherein the second passage is coaxial with the axis and the inlet port is between the second segment and the second outlet port, and further including an actuator for translating the sealing element between the first and second positions, the actuator including a shaft extending in the second passage along the axis, one end of the shaft being connected to the sealing element.

--34. The valve of claim 33 wherein the actuator shaft has circular cross sections at right angles to the axis so that the second passage has annular cross sections.

--35. The valve of claim 32 wherein the second passage includes a section with a continuous taper between the inlet port and the second outlet port, the taper of the second passage being such that the perimeter of the cross-section of the tapered section closest to the inlet port is greater than the perimeter of all other cross-sections of the tapered section and the perimeter of the cross-section of the tapered section closest to the second outlet port is smaller than the perimeter of all other cross-sections of the tapered section, and the portion of the sealing

element peripheral surface for forming a seal between the sealing element and the second outlet port is tapered such that when the sealing element seals the second outlet port cross sections of the sealing element peripheral surface closest to the inlet port have greater perimeters than cross sections of the sealing element peripheral surface closest to the second outlet port.

--36. The valve of claim 35 wherein the continuous taper of the second passage has a frusto-conical shape and the portion of the sealing element sealing surface for forming the seal between the sealing element and the second outlet port has an arcuate shape.

--37. The valve of claim 36 wherein the continuous taper of the second passage has circular cross sections at right angles to the axis and the portion of the sealing element peripheral surface for forming a seal between the sealing element and the second outlet port is a sector of a sphere.

--38. The valve of claim 32 wherein the sealing element and the passages are arranged so that as the sealing element translates between the first and second positions fluid flow paths are provided between the inlet port and both outlet ports.

--39. The valve of claim 16 wherein the shut-off surfaces are radially symmetrical to an actuation axis of the actuator for translating the sealing element.

--40. The valve of claim 39 wherein the actuator includes a tappet valve connected to the sealing element.

--41. The valve of claim 40 wherein cross-sections of the shut-off surfaces in planes extending in the direction of longitudinal movement of the actuator and surface parts of the sealing element which mate with the shut-off surfaces and are opposite the inlet form an essentially continuous line.

--42. The valve of claim 41 wherein the opposing shut-off surfaces form an angle with the actuation axis that is greater than or equal to 15°.

--43. The valve of claim 16 wherein the opposing shut-off surfaces form an angle with the actuation axis at the annular sealing surface that is greater than or equal to 15°.

--44. The valve of claim 43 wherein the opposing shut-off surfaces of the valve seat includes material that is softer and more elastic than the shut-off surfaces of the sealing elements.

--45. The valve of claim 16 wherein the opposing shut-off surfaces of the valve body are formed of material that is softer and more elastic than shut-off surfaces of the sealing element.

--46. The valve of claim 45 wherein the opposing shut-off surfaces have a step or nose-shaped projection at the annular sealing surface.

--47. The valve of claim 16 wherein the opposing shut-off surfaces have a step or nose-shaped projection at the annular sealing surface.

--48. The valve of claim 16 wherein the outlets are on both sides of the inlet and oppose each other.--